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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LE, EMILY M	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 10/06/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/813,153	RUBEN ET AL.	
	Examiner	Art Unit	
	Emily Le	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07/25/03* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,11,17,19 and 22-58* is/are pending in the application.

4a) Of the above claim(s) *1,11,17,19,22-24,27-29 and 41-43* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-26, 30-40, and 44-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Examiner Emily Le, Art Unit 1648.

Applicant's election of Group III in Paper NO. 6, and amino acid residues 1-272 of SEQ ID NO. 125 in Paper NO. 9 has been acknowledged. It is also acknowledged that the Applicant made the elections with traverse. The applicant traversed on the grounds that the restriction, Paper NO. 5, and election of species, Paper NO. 8 were not in accordance with the guidance set forth in MPEP § 803. The traversal was made on the ground(s) that the examiner has failed to show that the examination of all groups would entail a serious burden. This is not found persuasive. The search for Groups I-VIII is not coextensive and would result in an undue burden to the office. In addition, the searches for amino acid residues 23-32, 61 to 68, 141-148, and 1-272 of SEQ ID NO. 125 would not overlap. Each residue of SEQ ID NO. 125 is unique.

The examiner urges Applicant to review MPEP §803 because applicant is taking the teachings of MPEP § 803 out of context. The MPEP set forth two criteria for a proper requirement for restriction between patentably distinct inventions. The first criteria, the inventions must be independent or distinct as claimed. The second criteria, there must be a serious burden on the examiner if restriction is required. The examiner has set forth in the restriction requirement, Paper NO. 5 the distinctiveness of each invention; ergo, satisfying the first criteria. For additional explanation on distinctiveness

of each invention, refer to page 2 and 3 of Paper NO. 5. In satisfying the second criteria, each invention is recognized to have a different status in the art because of their different classification and divergent subject matter. Applicants are directed to MPEP 808.02 which states that "Where the related inventions as claimed are shown to be distinct and under the criteria of MPEP 806.05 (c-I), the examiner in order to establish reasons for insisting upon restriction, must show by appropriate explanation one of the following: A) Separate classification thereof, B) A separate status in the art when they are classifiable in together, and C) a different field of search". In the instant case, Group I is classified in class 536, subclass 23.5 and class 435, subclasses 252.3, 325, 6, 320.1, and 69.1; Group II is classified in class 530, subclass 350; Group III is classified in class 530, subclass 387.1; Group IV is classified in class 514, subclass 12; Group V and VI is classified in class 435, subclass 7.1; Group VII is classified in class unknown, subclass unknown; and Group VIII is classified in class 514, subclass 44.

In the instant case, both the restriction and election of species requirement is deemed to be proper. Having shown that these inventions have acquired a separate status in the art as shown by their different classification, the Examiner has prima facie shown a serious burden of search (see MPEP § 803).

The requirement is still deemed proper and is therefore made FINAL.

Applicant's amendments, filed 04/24/03 (Paper NO. 6) and 07/25/03 (Paper NO. 9), are also acknowledged.

Status of Claims

The status of the claims is as follow: Claims 2-10, 12-16, 18, 20 and 21 have been canceled. Claims 25-58 have been added. *Claims 1, 11, 17, 19, 22-58 are pending. Claims 25-26, 30-40, and 44-58 are under examination.* Claims 1, 11, 17, 19, 22-24, 27-29, and 41-43 are withdrawn from further consideration by the examiner under 37 CFR 1.142(b), as being drawn to a non-elected inventions and species, the requirement having been traversed in Paper NO. 6 (4/24/03) and Paper NO. 9 (07/25/03).

Claim Objections

Claims 26 and 40 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 26 and 40 are duplicates of claims 25 and 39, respectively. Applicant is advised to amend the claims to reflect the elected invention.

Claims 38 and 55 are objected to because of the following informalities: Claims 38 and 55 recite a hybridoma that produces the antibody or fragment thereof. Hybridomas are known to produce antibodies not fragments of antibodies. Applicant is required to amend the claims so that it would not read on fragments of antibodies are produced by hybridomas. The Examiner suggest that Applicant insert --produced from

the antibody-- therefor "thereof" in line 1 of the claims to obviate the rejection.

Appropriate correction is required.

Specification

The disclosure is objected to because of the following informalities: The text of the specification refers to a Table 1. Such table cannot be found within the specification.

Appropriate correction is required. Applicant is reminded to avoid the addition of new matter.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims *25-26, 30-40, and 44-58 are* rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility.

The claimed invention is directed to an isolated antibody that specifically binds to a protein having amino acid sequence of SEQ ID NO. 125. The utility of the claimed antibody is determined by the ultimate utility of the protein to which it binds.
The disclosure of "the protein product of this gene is expected to have activities normally associated with the calmodulin superfamily of genes and polypeptides...the protein... shares homology with the conserved troponin-C protein of Drosophila melanogaster, which is involved in the regulation of normal muscle function" (bridging

paragraph on page 57) which is not a specific and substantial asserted utility of the protein. The applicant has not disclosed the specific activity of the protein having amino acid sequence of SEQ ID NO. 125. The disclosure that Applicant does provide is a list of speculative uses of the protein, such as diagnosis and/or treatment of osteoclastoma, treating diseases of the musclulo-skeletal system and cardiac diseases; to determine bio-activity, raise antibodies; and as tissue markers which are not specific and substantial utilities. Applicant has not provided any evidence that conveys the linkage between the level of expression of the protein and osteoclastoma. Without such evidence it is unclear how the protein can be utilized in the diagnosis of osteoclastoma, particularly in view of the protein's expression in other tissues. Thus, the utility of the protein is not specific and substantial. Without a specific and substantial asserted utility for the protein, the isolated antibody that binds to the protein having SEQ. ID. NO. 125 also lacks specific and substantial utility. Therefore, the claimed invention is rejected under 35 U.S.C § 101 for lacking support for a specific and substantial utility for the isolated antibody.

Claims 25-26, 30-40, and 44-58 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to make and use the claimed invention. This is an **Enabl- ment** rejection. Without a disclosure of the specific and

substantial utility for the claimed invention, it would be an undue burden for one of ordinary skill in the art to practice the claimed invention.

Claims Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 25-26, 30-40, and 44-58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

To be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. In Genentech *Inc. v. Novo Nordisk* 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997); *In re Wright* 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); See also *Amgen Inc. v. Chugai Pharm. Co.,* 927 F.2d 1200, 1212, 18 USPQ2d 1016, 1026 (Fed. Cir. 1991); *In re Fisher* 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). Further, in *In re Wands* 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) the court stated:

> Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in *Ex parte Forman* [230 USPQ 546, 547 (Bd Pat App Int 1986)]. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples,

(4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification at the time the application was filed, would not have taught one skilled in the art how to make and/or use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F. 2d 1557, 1562, 27 USPQ 2d 1510, 1513 (Fed. Cir. 1993).

The quantity of experimentation necessary is generally great.

The amount of guidance provided is sparse. The claimed invention is directed to an antibody that binds to a protein identified as SEQ ID NO: 125. The disclosure provided by Applicant lacks guidance of how to use the claimed antibody for the diagnosis and/or treatment of osteoclastoma, treating diseases of the musculo-skeletal system and cardiac diseases.

The specification provides no working examples of the effectiveness of the antibody that binds to SEQ ID NO: 125 in inducing the desired immune response to treat diseases of the musculo-skeletal system, osteoclastoma, and cardiac diseases, the only disclosed utilities for the claimed antibody. Applicant's assertion that because the protein that the claimed antibody binds to is a product of a gene that is expressed in osteoclastoma and brain tissues, the claimed antibody can be used to diagnose and/or treat osteoclastoma, treat diseases of the musculo-skeletal system and cardiac diseases. Because the protein is expressed in a variety of normal tissue as well as pathologic tissues. Given the

broad expression of the protein in normal and diseased tissues, the specification does not teach how one can diagnose or treat any particular condition. The assertion lacks supporting data that ties the claimed antibody specifically to diseases of the musculo-skeletal system, osteoclastoma, and cardiac diseases.

The nature of the invention is an antibody that binds to a protein, specifically SEQ ID NO: 125 of the instant invention.

The state of the prior art is such that it is known that antibodies can be raised from antigenic epitopes that contain at least 7 sequences. Although the art teaches how to make antibodies, the art and the instant specification does not teach how to use the antibody that is specific to SEQ ID NO: 125 to treat or diagnose osteoclastoma, diseases of the musculo-skeletal system, and cardiac diseases.

The relative skill of those in the art of how to use antibody that binds to SEQ ID NO: 125 to treat or diagnose osteoclastoma, diseases of the musculo-skeletal system, and cardiac diseases is high.

The art concerning how to use the claimed antibody to treat or diagnose osteoclastoma, diseases of the musculo-skeletal system, and cardiac diseases is unpredictable for the reasons noted above.

The breadth of the claimed invention is broad. The instant invention is directed to an isolated antibody that binds to a protein, specifically SEQ ID NO: 125, which is expressed in various tissues.

Therefore, the instant invention, based on the evidence as a whole, in light of the factors articulated by the court in *In re Wands*, lacks an enabling disclosure.

Claims 44-58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The invention appears to employ novel biological materials, specifically the HCE5F43 cDNA contained in ATCC Deposit Number 209580. Since the biological materials are essential to the claimed invention, they must be obtainable by a repeatable method set forth in the specification or otherwise readily available to the public. If the biological materials are not so obtainable or available, the requirements of 35 U.S.C. § 112 may be satisfied by a deposit of biological materials. The specification does not disclose a repeatable process to obtain the biological materials and it is not apparent if the biological materials are readily available to the public. It is noted that Applicant has deposited the biological materials, p. 03 of the specification, but there is no indication in the specification as to public availability. If the deposit is made under the Budapest Treaty, then an affidavit or declaration by Applicant, or a statement by an attorney of record over his or her signature and registration number, stating that the specific biological materials have been deposited under the Budapest Treaty and that the biological materials will be irrevocably and without restriction or condition released to the public upon the issuance of a patent, would satisfy the deposit requirement made

herein. If the deposit has not been made under the Budapest Treaty, then in order to certify that the deposit meets the criteria set forth in 37 C.F.R. § 1.801-1.809, Applicant may provide assurance of compliance by an affidavit or declaration, or by a statement by an attorney of record over his or her signature and registration number, showing that:

During the pendency of this application, access to the invention will be afforded to the Commissioner upon request;

All restrictions upon availability to the public will be irrevocably removed upon granting of the patent;

The deposit will be maintained in a public depository for a period of 30 years or 5 years after the last request or for the effective life of the patent, whichever is longer;

A test of the viability of the biological material at the time of deposit will be made (see 37 C.F.R.§ 1.807); and

The deposit will be replaced if it should ever become inviable.

Applicant's attention is directed to M.P.E.P. § 2400 in general, and specifically to §2411.05, as well as to 37 C.F.R. §1.809(d), wherein it is set forth that "the specification shall contain the accession number for the deposit, the date of the deposit, the name and address of the depository, and a description of the deposited material sufficient to specifically identify it and to permit examination." The specification should be amend to include this information, however, Applicant is cautioned to avoid the entry of new matter into the specification by adding other information.

Claims 30, 34 and 47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a **New Matter** rejection. Support for "human antibody", recited in claims 30 and 47; and luminescent label and bioluminescent label, recited in claim 34, is not found within the specification, as originally filed.

*Applicant is required to cancel the **New Matter** in the response to this Office Action.* Alternatively, Applicant is invited to clearly point out the written support for the instant limitations.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25-26, 31-40, 44-46, and 48-58 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al. (WO94/04563, "Yamada"). The rejection of the claims are based on the language used in U.S. Patent NO. 5,733,549, which is a U.S.C § 371 of PCT/JP93/01142, which is WO94/04563.

Claims 25-26, and 31-40 are directed to an isolated antibody that specifically binds to SEQ ID NO: 125. The claims are further limited to a human antibody,

monoclonal antibody, polyclonal antibody, an antibody that is selected from a group consisting of: chimeric antibody, humanized antibody, singe chain antibody, and Fab fragment; the antibody is labeled with a label selected from a group consisting of: enzyme, fluorescent, luminescent, and bioluminescent; a cell that produces the same antibody, a hybridoma that produces the same antibody, and that the antibody binds to the protein in a Western Blot and ELISA.

Claims 44-46, and 48-58 are directed to an antibody that specifically binds to the protein that is encoded by the HCE5F43 cDNA contained in ATCC Deposit Number 209580. The claims are further limited to a human antibody, monoclonal antibody, polyclonal antibody, an antibody that is selected from a group consisting of: chimeric antibody, humanized antibody, singe chain antibody, and Fab fragment; the antibody is labeled with a label selected from a group consisting of: enzyme, fluorescent, luminescent, and bioluminescent; a cell that produces the same antibody, a hybridoma that produces the same antibody, and the antibody binds to the protein in a Western Blot and ELISA.

Yamada teaches an antibody that reads on claims 25-26, 31-40, 44-46, and 48-58 of the instant invention. Yamada teaches an antibody that specifically binds to an epitope of SEQ ID NO: 2 in the Yamada reference. Amino acids 1-7 of SEQ ID NO: 2 in the Yamada reference are the same as amino acids 129-135 of SEQ ID NO: 125 of the instant invention. Yamada, thereby, teaches an antibody that binds to SEQ ID NO: 125 (column 5, line 12). The antibody taught by Yamada is a monoclonal (column 5, line 22), polyclonal antibody (example 10, column 28), Fab fragment antibody (line 38,

column 12), and labeled with an enzyme, fluorescent, luminescent (line 18, column 16). Further, Yamada teaches an isolated cell and hybridoma that produces the antibody that binds to SEQ ID NO: 125 (line 38, column 14). In addition, the antibody disclosed by Yamada binds to the same epitope of SEQ ID NO: 125, protein, in a Western Blot and ELISA (line 5, column 16).

Since the antibody that is disclosed by Yamada is known to bind to the amino acid epitope of SEQ ID NO: 125, it is inherent that the same antibody would bind to the same epitope of the protein that is encoded by the HCE5F43 cDNA, which is the nucleotide sequence identified as SEQ ID NO: 55.

Ergo, Yamada anticipates the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Le whose telephone number is (703) 305-4452. The examiner can normally be reached on Monday - Friday, 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on (703) 308-4027. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0169.

E. Le

JEFFREY STUCKER
PRIMARY EXAMINER